



## A Scale to Measure the Attitude of Dairy Farmers Towards Kisan Call Centre Based Extension Services

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**The aim of this study is to develop an attitude scale about Kisan Call Centres (KCC) for dairy farming community. The purpose of scale construction is to design a questionnaire that provides a quantitative measurement of a theoretical variable. The method of Likert's summated rating was used to develop the attitude scale. A sum of 60 statements was selected by reviewing the literatures and given to the farmers of non-sample area in Tamil Nadu for their opinion on KCC. Those statements were then formulated using Likert Summated Rating Scale method and based upon 't' value obtained for each statement, 34 statements were retained on the final scale. The reliability and validity of the scale indicates its precision and consistency of the results. This scale can be used to measure farmers' attitude beyond the study area with suitable modifications in the future.**

**Key words:** Attitude scale, Kisan Call Centre (KCC), Likert's summated rating, Reliability and Validity.

The Department of Agriculture and Cooperation (DAC), Ministry of Agriculture (MoA), Government of India launched Kisan Call Centres (KCC) on January 21, 2004 to respond to the issues raised by farmers in agriculture and allied fields instantly in local language. At present, the call centres are operating in 13 states all over India. The call centre functions with a toll free number "1800-180-1551" (if the farmer calls from his/her mobile phones) or "1551" (from BSNL landline services) throughout the country and the calls land on the nearby centre from the state where call is made. Queries related to agriculture and allied sectors are being addressed through these centres [www.kisancallcentre.net](http://www.kisancallcentre.net). The top users of the KCC scheme are Tamil Nadu and Maharashtra followed by Uttar Pradesh and Rajasthan (Kalam, 2005).

Within a short span of time, KCCs have expanded vastly in India. Various forces are working to change the extension from a process of technology transfer to a process of facilitating wide range of communication, information and advocacy services. In the midst of these changes, extensionists are grappling with the question of how best to harness KCC to benefit the dairy farming community since India has the highest and livestock population and is the leading producer of dairy products. Since KCCs inception, there was no research conducted in the field of dairying to know the attitude of the dairy farmers who were actually benefitted using KCC services. Attitude is an organised predisposition to think, feel, perceive and

behave towards a cognitive object (Tripathi, 2008). There is also no scale available to measure beneficiary dairy farmers' attitude towards KCC based extension services. Therefore the present study was contemplated to develop and standardize a scale.

### Materials and Methods

The method of summated rating suggested by Likert (1932) was followed in the development of scale. A summated rating scale is a set of attitude statements all of which are considered of approximately equal attitude value and to each of which subjects respond with degrees of agreement or disagreement carrying different scores. This method was adopted for the present study because, the use of single statement to represent a concept is avoided and instead several statements as indicators, all representing different facets of the concept to obtain a more well-rounded perspective can be used. The procedure of this method followed in the study was adopted from Ganesh Kumar (2011) to construct a distinct attitude scale towards KCC extension services.

### Collection and editing of statements

Seventy five statements expressing the attitude of the farmers towards the services of KCC were first collected from available literature and in consultation with specialists in the field of extension and edited on the basis of criteria suggested by Likert (1932) and Edward (1957). Out of 75 statements, 60 statements were retained and were found to be non-ambiguous and non-factual.

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### 1. Relevancy test

All the statements collected may not be relevant equally in measuring the attitude of farmers towards KCC based extension services. Hence, these statements were subjected to scrutiny by an expert panel to determine the relevancy and screening for inclusion in the final scale. For this, the list of entire 60 statements was sent to a panel of experts. The experts comprised from Dairy extension department at National Dairy Research Institute, Indian Agriculture Research Institute, subject matter specialists in KVKs and Kisan Call Centre officials. The statements were sent to 54 experts with request to critically evaluate each statement for its relevancy to measure attitude of farmers towards KCC based extension services. The experts were requested to give their response on a five point continuum viz, Strongly Agree, Agree, Un Decided, Disagree and Strongly Disagree with scores 5,4,3,2 and 1 respectively.

Out of 54 experts only 30 responded in a time span of one month. The relevancy score of each item were ascertained by adding the scores on rating scale for all the 30 experts' responses. From this data, relevancy percentage, relevancy weightage and mean relevancy scores were worked out for all the statements by using the following formulae.

#### a) Relevancy Percentage

Relevancy percentage was worked out by summing up the scores of highly relevant, relevant and neutral categories, which were converted into percentage.

#### b) Relevancy Weightage (RW)

Relevancy weightage was obtained by the formula

$$RW = \frac{HRR+RR+NR+IR+HR}{MPS}$$

#### c) Mean Relevancy Score (MRS)

This was obtained by the following formula

$$MRS = \frac{HRR+RR+NR+IR+HR}{N}$$

Where,

HRR = High Relevant Response (X5)

RR = Relevant Response (X4)

NR = Neutral Response (X3)

IR = Irrelevant Response (X2)

HR = Highly Irrelevant (X1)

MPS = Maximum Possible Score (30 x 5 = 150)

N = Number of Experts (30)

Using these three criteria the statements were screened for their relevancy. Accordingly, statements

having relevancy percentage >70, relevancy weightage >0.70 and mean relevancy score >3.5 were considered for final selection of statements. By this process, out of 75 statements, 60 statements had relevancy percentage >70, relevancy weightage >0.70 and mean relevancy score >3.5 and were isolated in the first stage of screening and suitably modified and rewritten as per the comments of experts

### 2. Calculation of "t" value

These 60 statements were subjected to item analysis to delineate the items based on the extent to which they can differentiate the respondents with high attitude and the respondents with low attitude towards KCCs extension service. For this 30 farmers were selected from non-sample area. The respondents were asked to indicate their degree of agreement or disagreement with each statement on a five point continuum ranging from "Strongly Agree" to "Strongly Disagree". The scoring pattern adopted was 5 to 1, in which 5 weighs to Strongly Agree (SA) response, 4 to Agree (A), 3 to Undecided (UD), 2 to Disagree (DA) and 1 to Strongly Disagree (SDA) for positive statements and the scoring pattern was reversed for the negative statements.

Based upon the total scores, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total scores were considered as the high group and the bottom 25 per cent as the low group, so as these two groups provide criterion groups in terms of evaluating the individual statements as suggested by *Edwards (1957)*. Thus out of 30 farmers to whom the items were administered for the item analysis, 8 farmers with lowest and 8 with highest scores were used as criterion groups to evaluate individual items. The critical ratio, that is the 't' value which is a measure of the extent to which a given statement differentiates between the high and low groups of the respondents for each statements was calculated by using the formula suggested by *Edward (1957)*.

$$t = \frac{X_H - X_L}{\frac{(X_H - X_H)^2 + (X_L - X_L)^2}{n(n-1)}}$$

Where,

$$(X_H - X_H)^2 = \sum X_H^2 - (X_H)^2$$

$$(X_L - X_L)^2 = \sum X_L^2 - (X_L)^2$$

= Summation

$X_H$  = The mean score on given statement of the high group

$X_L$  = The mean score on given statement of the low group

$X_{H^2}$  = Sum of square of the individual scores on a given statement for high group

$X_{L2}$  = Sum of square of the individual scores on a given statement for low group

$X_H$  = Summation of square on given statement for high group

$X_L$  = Summation of square on given statement for low group

n = Number of respondents in each group

### 3. Selection of attitude statements for final scale

After computing "t" value for all the items, 34 statements with highest "t" value equal to or greater than 1.96 at 1 % level of significance were finally selected and included in the attitude scale.

### 4. Standardisation of scale

The validity and reliability was ascertained for standardization of scale. Reliability was measured by test – retest method.

#### Reliability and Validity of the scale

The final set of the 34 statements, which represented the attitude of farmers towards KCCs extension services, was administered on five-point continuum to a fresh group of 30 farmers which were not included in the actual sample to know the reliability of the test through test retest method. After a period of 15 days the scale was again administered to the same respondents and thus two sets of scores were obtained. The correlation coefficient for the both the sets were worked out. The 'r' value (0.784) was significant at 0.01 level of probability indicating the attitude scale was highly suitable for administration to the farmers as the scale was stable and dependable in its measurement. The content validity of the scale was tested. The content validity is the representative or sampling adequacy of the content, the substance, the matter and the topics of a measuring instrument. This method was used in the present scale to determine the content validity of the scale. As the content of the attitude was thoroughly covered the entire cosmos of KCCs extension services through literature and expert opinion, it was assumed that present scale satisfied the content validity. As the scale value difference for almost all the statements included had a very high discriminating value, it seemed reasonable to accept the scale as a valid measure of the attitude thus ensuring a fair degree of content validity.

### Results and Discussion

The 60 statements were subjected to judge's opinion from non-sample area. The response was recorded on a five point continuum representing strongly agree, agree, undecided, disagree, and strongly disagree with scores of 5,4,3,2 and 1 for positive statements and *vice-versa* for the negative statements. The attitude score of each respondent was calculated by summing the scores obtained by

them on all the items ranging between 34 and 170. The score range was based upon individual's grade on Strongly Agree (SA) and Strongly Disagree (SDA) for all positive and negative statements. By applying the Likert's formulae the 't' values were computed for 60 statements. The final scale consists of 34 statements having 't' value >1.96 based on 1% level of significance. Upon analysing the statement, the minimum 't' value obtained was 2.04 and the maximum was 7.10 were taken for constructing the final attitude statements. For the final attitude scale, the statements included were;

- 1 Because of the KCC, there has been a significant improvement in the economic conditions of the farmers
- 2 Farmers are likely to be put in hot water when they enquire dairy related problem with KCC\*
- 3 KCC's services are not at all satisfactory\*
- 4 Service provided by KCC is similar to other institutes like KVK, VAS, etc
- 5 At times, KCC is not good at all in terms of dairying\*
- 6 Non-clients of KCC are also competent in doing job faster than beneficiaries of KCC
- 7 KCC provides fair amount of information for the query farmers ask
- 8 Those who practice the suggestions delivered by KCC in the field conditions, receive the recognition for it that they should receive in the society
- 9 KCC is a boon to the welfare of the nation
- 10 Communications seem good within KCC and its interaction with their clients outside KCC
- 11 Those who handle well the clients, stand a fair chance of being praised by farmers
- 12 Officer at Level – I KCC is unfair to dairy farmers\*
- 13 The benefits received from KCC are as good as most other organizations offer to other farmers
- 14 KCC extension services avoid the personal extension contact
- 15 Clients of KCC get ahead as fast here as they do in other places
- 16 There are few rewards for those who adopt KCC suggestions at times\*
- 17 There is too much opportunities and challenges found at farm level after exposing to KCC
- 18 Work assignments are not fully explained in KCC by the officials\*
- 19 KCC cannot meet location specific needs of the farmers\*
- 20 KCC is one of the potential tools of ICT to reach needy farmers
- 21 Farmers' feedback is fast through KCC than traditional methods

- 22 KCC services' is a distant dream for resource poor farmers\*
- 23 Illiteracy will not deter farmers in availing KCC services
- 24 Existing infrastructure of KCC is not enough to meet the needs of farming community\*
- 25 KCC services assist the farmer in planning and decision making aspects in dairying\*
- 26 Only resourceful farmers can get the benefit of KCC\*
- 27 All kinds of information exchange are possible through KCC
- 28 KCC agents often fail to comprehend the queries\*
- 29 Phone-in-line with scientists gives first-hand information about queries
- 30 1551 from other connections is difficult to reach because calls to other helplines are chocking to this number\*
- 31 KCC extension services provide new opportunity to build a skilled and knowledge community
- 32 KCC is one of ignorant scheme of ministry of Agriculture, Govt of India\*
- 33 KCC based extension services are alternative to the present extension system
- 34 KCC is one best ICT initiatives that Government of India ever had since 2004

#### Note

##### \* Negative statement

These final statements can be included in the questionnaire to quantify the attitude of dairy farmers. The respondents will be asked to indicate their degree of agreement or disagreement with each statement on a five point continuum of Strongly

Agree (SA), Agree (A), Undecided (UD), Disagree (DA) and Strongly Disagree (SDA). The scoring pattern will be adopted from 5 to 1, in which 5 weighs to Strongly Agree (SA) , 4 to Agree (A), 3 to Undecided (UD), 2 to Disagree (DA) and 1 to Strongly Disagree (SDA) response for positive statements and the scoring pattern reversed for the negative statements. The score obtained for each statement will be summed up to arrive the attitude score of the respondents.

#### Conclusion

Out of 60 statements, 34 statements were retained on the final scale. The reliability and validity of the scale indicates its precision and consistency of the results. This scale can be used to measure farmers' attitude beyond the study area with suitable modifications. Assessment of attitude will help to know the dairy farmers' satisfaction towards KCC. This will illustrate the strength and weakness of the KCC and also gives an idea to enhance better service in future to farming community.

This was a part of larger Ph.D. study on "Impact of Kisan Call Centre on Technological Adoption among Dairy Farmers of Tamil Nadu".

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